

Guidance for Pollutant Reporting in the West Virginia CY2009 Emissions Inventory

Changes to Satellite i-Steps Pollutant Code Table

The pollutant table included with the Satellite i-Steps software for the CY2005 inventory included more than 4600 entries. For the CY2006 inventory (3 years ago) we reduced the size of this list to 546 entries. Our primary goals were to remove unnecessary entries, correct errors and duplications in the list, and make the list as compatible as possible with the pollutant list used by USEPA in the National Emissions inventory (NEI). Where pollutants did not exist in the NEI list, and had not been reported to us in the last 3 years, we removed them (3939 entries). Where the codes were either in error or did not match the NEI, we changed the codes (54 entries).

However, removing all those pollutants from the list also removed your ability to search for them or to delete them from your database. For the CY2007 inventory (2 years ago), we put all those pollutants back. The 3939 deleted pollutants now have “DELETED” at the beginning of the pollutant name, and the 54 corrected pollutants have “REPLACED BY” at the beginning of the name. For a list of those 54 corrections, see Table 4 below.

This will not affect the majority of sources, but we wanted to be sure that you have the capability to make any necessary corrections. If you wish to use this updated pollutant table to make these corrections, it may be downloaded from our website.

Reportable Pollutants

Include the following (Satellite i-Steps pollutant codes in **boldface**):

Criteria Pollutants and Precursors

- Primary Particulate Matter (**PM-PRI**, **PM10-PRI**, and **PM25-PRI**)
- Sulfur Dioxide (**SO2**)
- Nitrogen Oxides (**NOX**)
- Carbon Monoxide (**CO**)
- Volatile Organic Compounds (**VOC**) (reportable as a group)
- Lead (**7439921**)
- Ammonia (**NH3**)

Other Title V Reportable Pollutants

- Reduced Sulfur Compounds (**TRS**) (reportable as a group)
- Class I and II Compounds (**CFC**) (reportable as a group)

Greenhouse Gases

- Carbon Dioxide (**124389**)
- Nitrous Oxide (**10024972**)
- Methane (**74828**)
- Hydrofluorocarbons (**HFC**) (reportable as a group and individually)
- Perfluorocarbons (**PFC**) (reportable as a group and individually)
- Sulfur Hexafluoride (**2551624**)

Hazardous Air Pollutants (187 reportable individually and/or speciated groups)
see detailed lists in Tables 1, 2, and 3 below

This guidance will provide more detailed information about the reporting requirements for each group of pollutants listed above.

Criteria Pollutants

These are called “criteria” pollutants because the National Ambient Air Quality Standards promulgated for these pollutants are based on health and welfare "criteria" documents.

Particulate Matter

There are three (3) types of particulate emissions which must be reported based on particle size:

Total Particulate Matter

Particulate Matter of 10 microns or less

Particulate Matter of 2.5 microns or less

Particulate matter emissions will not be double or triple counted. Users of the data understand that these pollutant codes reflect different overlapping size fractions of particulate matter. Title V fees, however, are based on Total Particulate Matter, so this also is not a problem.

For reporting purposes, we consider Total Particulate Matter to be Particulate Matter of 30 microns or less. With regard to PM emissions of all species we have implemented a change in assumptions for the CY2005 and later inventories. In past years we have always assumed that companies were reporting only the filterable fraction for particulate matter, and were not reporting condensable particulate matter; so we reported to US EPA that the emission number was only the filterable fraction. EPA would subsequently calculate a corresponding condensable fraction to add to the reported number to get Primary PM (**PM-PRI**) emissions. This assumption may have resulted in significant over-reporting of PM emissions from West Virginia sources which could have adverse impacts on modeling results. Therefore, please be sure to report your CY2009 PM emissions using the correct pollutant codes: **PM-PRI**, **PM10-PRI**, and **PM25-PRI** to report the combined filterable and condensable fractions. If your emission estimate represents the filterable fraction only, and you cannot estimate **PM-PRI**, you may report **PM-FIL** instead.

AP-42 is the most common resource for determining **PM-PRI** and its fractions. You may have source test data, or trade group resources may be available which you may also use. Our website includes a link to EPA's PMCalc software to help you calculate **PM-PRI** and its fractions. (Note this warning from the USEPA website: In some instances, if you have MS Office 2000 and above installed, PMCalc may not run, or MS Office software may no longer run).

In summary, here are the preferred pollutant codes for Particulate Matter:

PM-PRI, **PM10-PRI**, and **PM25-PRI**.

If your estimate is only the filterable fractions, use:

PM-FIL, **PM10-FIL**, and **PM25-FIL**.

As a last resort, you can use the old codes:

PT, **PM10**, and **PM2.5**; but we will report these to USEPA as filterable.

Ozone

Ozone is a criteria pollutant. However, emissions of ozone precursors (**CO**, **NOX** and **VOC**) are normally reported instead, with the expectation that ozone is not significantly emitted directly from point sources to the atmosphere.

Lead Compounds

Lead (and compounds) has a unique distinction in that it is both a criteria pollutant and a HAP. Lead should be reported both individually and as a compound category, including speciation.

Ammonia

Ammonia is a very important precursor for fine particulate matter and every effort must be made to include ammonia in the inventory. Ammonia is a fairly widespread pollutant, but often has been underemphasized in the past.

Greenhouse Gases

In addition to carbon dioxide, methane, and nitrous oxide, we need data for these three pollutants: hydrofluorocarbons (**HFC**), perfluorocarbons (**PFC**), and sulfur hexafluoride (**SF₆**). Report hydrofluorocarbons and perfluorocarbons as groups using the pollutant codes **HFC** and **PFC**, and ALSO report individual speciated **HFC**'s and **PFC**'s if the pollutant codes are available. To assist you, we have added pollutant codes for 5 **HFC**'s and 3 **PFC**'s to the pollutant lookup table.

What are Greenhouse Gases?

Solar radiation is absorbed and reflected by the Earth, and longer wavelength radiation is emitted back out to space. Greenhouse gases are those which allow solar radiation to pass, but trap the longer wavelength radiation. This may result in an increase in temperature, known as the "greenhouse effect." The greenhouse gases include carbon dioxide, methane, nitrous oxide, water, ozone, chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, hydrofluorocarbons (**HFCs**), perfluorocarbons (**PFCs**), and sulfur hexafluoride.

Why are we only requesting data for six of these gases?

The impact of human activity on the amount of water vapor in the air is negligible compared to natural processes. Ozone concentrations have been and are being modeled using emissions of ozone precursors in the existing inventory. CFCs, HCFCs, and halons are being modeled using emissions of the Class I and Class II compounds. As a result, we are only requesting additional emission estimates for the six remaining greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons (**HFCs**), perfluorocarbons (**PFCs**), and sulfur hexafluoride.

Carbon Dioxide (CO₂)

The pollutant code for Carbon Dioxide in Satellite i-Steps is **124389**. You must also continue to report emissions of the criteria pollutant Carbon Monoxide, using pollutant code **CO**.

Methane (CH₄)

The pollutant code for Methane in Satellite i-Steps is **74828**.

Nitrous Oxide (N₂O)

The pollutant code for Nitrous Oxide in Satellite i-Steps is **10024972**. You must also continue to report emissions of the criteria pollutant Oxides of Nitrogen, using pollutant code **NOX**. There may be some overlap between these estimates, but this potential double-counting will not affect fees due under 45CSR30.

Hydrofluorocarbons

The pollutant code for hydrofluorocarbons in Satellite i-Steps is **HFC**. We have also added pollutant codes for the following **HFC**'s:

| | |
|-------------|-----------|
| HFC-23 | 75467 |
| HFC-32 | 75105 |
| HFC-227ea | 431890 |
| HFC-236fa | 690391 |
| HFC-4130mee | 138495428 |

Perfluorocarbons

The pollutant code for perfluorocarbons in Satellite i-Steps is **PFC**. We have also added pollutant codes for the following **PFC**'s:

| | |
|-----------------|--------|
| Perfluoroethane | 76164 |
| Perfluorobutane | 355259 |
| Perfluorohexane | 355420 |

Sulfur Hexafluoride (SF₆)

The pollutant code for sulfur hexafluoride in Satellite i-Steps is **2551624**.

Greenhouse Gas Emission Factors or Estimation Methods

West Virginia has recently joined The Climate Registry. Their website, found at <http://www.theclimateregistry.org/resources/protocols/> contains detailed protocols for greenhouse gas estimation and reporting.

If you cannot find the information you need at The Climate Registry, another source of emission factors is EPA's AP-42 "Compilation of Air Pollutant Emission Factors," which can be found at EPA's Clearinghouse for Inventories and Emission Factors (CHIEF) at <http://www.epa.gov/ttn/chief>. If you have reasonable emission factors or estimation methods other than those contained in AP-42 or other EPA documents, feel free to use them instead. Our website includes links to some additional documents and web-based calculation tools. The document "*Documentation for Emissions of Greenhouse Gases in the United States 2003*," Part I contains extensive documentation for estimating GHG emissions. As a bonus, the learning curve should be very low. EPA and state agencies collaborated to compile Emissions Inventory Improvement Program (EIIP) methods documents. Those are also available on our web page. There are several web based software-based GHG calculating tools available as well. The World Business Council for Sustainable Development has calculation tools available at <http://www.ghgprotocol.org/calculation-tools>. This calculation tool seems to be fairly easy to learn. Another software-based calculation tool can be downloaded from the Clean Air and Climate protection web site at <http://www.icleiusa.org/cacp>. This tool appears to have a steeper learning curve. Both web-based calculation tools require registration.

Hazardous Air Pollutants (HAPs)

Due to a December 19, 2005 Federal Register final rule which deleted methyl ethyl ketone (CAS Number 78-93-3) from the list of hazardous air pollutants, there are currently 187 HAPs listed by USEPA under section 112(b) of the 1990 Clean Air Act Amendments. However, MEK continues to be regulated as a volatile organic compound (**VOC**), and must still be included in **VOC** emissions reporting.

Requirement to Report Hazardous Air Pollutants

Facilities are required to submit information on all HAPs emitted. Speciation (reporting of individual HAP compounds within categories) is required for most HAP categories. If the facility is unable to provide speciated HAP data, USEPA will speciate the data themselves, using default speciation profiles derived from a wide number of sources.

Aggregated vs. Speciated Reporting for HAP Groups

The text of the Clean Air Act contains a specific listing of Hazardous Air Pollutants (HAPs) and specifies several "groups" that include large numbers (often thousands) of individual compounds or substances. Thus, the tables provided by DAQ can never be fully inclusive of all applicable component compounds. For metals, the groups are also defined to include the unreacted or elemental metal itself (e.g., lead metal). The "groups" should total to the sum of all of the components. However, if you have an unknown component of a group, or a component that does not have a pollutant code in the emissions inventory software, go ahead and include these emissions in the total for the aggregated HAP compound category, even if the individual species is not reported separately.

As in previous years, DAQ is requiring increased speciation of most of the HAP compound categories, particularly the metal compound categories. For such HAP compound categories, DAQ is requiring both aggregated total emissions in the HAP compound category as well as speciated compounds to the extent known.

The detailed HAP lists are shown below in Tables 1 - 3, and contain the specific pollutant codes that should be used in reporting individual pollutants and categories.

HAPs Also Reportable as **VOC** or Particulate Matter

Many compounds in the list of HAPs are also reportable as **VOC** or Particulate Matter. These emissions must be reported both as HAPs and included in the **VOC** or PM totals. Conversely, there are some HAPs that must be reported, but are not defined as either a **VOC** or PM.

Example 1

If a facility emits a pollutant that is reportable as both an individual HAP (such as benzene) and part of a Criteria Pollutant category (such as **VOC**), the emissions must be reported under all applicable categories. For example, if a process emits 10 tons of benzene (which is both a **VOC** and a HAP), and 10 tons of ethanol (which is a **VOC** but is not a HAP), the reported emissions would be 10 tons of benzene (code **71432**) and 20 tons of **VOC**. Even though the benzene is reported as an individual HAP, it must ALSO be reported as part of the total **VOC** emissions.

Individual non-HAP pollutants need not be reported if they are not on the Reportable Pollutants list, except as part of a larger category. In the above example, ethanol was included as part of the total **VOC** emissions, but was NOT reported as an individual pollutant, because it is not a

HAP. If the facility wishes to go into more detail and report individual emissions of non-HAP VOCs (ethanol in this example), it may do so, assuming that an appropriate pollutant code can be found in the emissions inventory software. If no such pollutant code can be found, and you feel you must report speciated non-HAP pollutants, we may be able to add extra pollutants to the list.

Example 2

If a process emits 10 tons of methylene chloride (which is a HAP but not a **VOC**), 10 tons of Cellosolve and 10 tons of Methyl Cellosolve (which are HAPs in the category of "glycol ethers," and are also **VOCs**), the reported emissions would be 10 tons of methylene chloride (code **75092**), 20 tons of glycol ethers (code **171**), and 20 tons of **VOC**. Note that Cellosolve and Methyl Cellosolve are not reported as individual chemicals, since DAQ is not requiring HAPs in the compound category "glycol ethers" to be speciated at this time. However, if a facility wishes to go into more detail and report individual compounds in the "glycol ethers" category, it may do so (assuming an appropriate pollutant code can be found in the emissions inventory software). For a list of available "glycol ether" pollutant codes, see Table 3 below.

Example 3

If a process emits 10 tons of Lead Phosphate and 10 tons of Lead Oxide (which are HAPs in the category of "lead compounds," and are particulate matter, but are not **VOCs**), the reported emissions would be 10 tons of Lead Phosphate (code **7446277**), 10 tons of Lead Oxide (code **1317368**), 20 tons of "Lead Compounds" (code **195**), and 20 tons of Particulate Matter (**PM-PRI**). The amount of **PM10-PRI** and **PM25-PRI** would be dependent upon the particle size distribution.

More About Various Groups of Metals and Groups of other Compounds

The values are to be for the mass of the total compound, not just the ion portion. For example, the value reported for Calcium Chromate should be the mass of the compound actually emitted and not just the chromium ion. In many cases, test reports only provide data for the ion (e.g., metal) mass that results from an analysis. If it is not possible or practical to comply with the specification of the actual total compound mass with actual data, reasonable assumptions as to the species of the involved substances may be used to establish the compound mass total, as long as they are referenced and justification provided in the comments field of either the process emission record or the facility general record.

As mentioned above, there are several metals and substances such as antimony, arsenic, beryllium, chromium, etc. where the unreacted metal/substance is included in the definition. Generally, these are not significant, but the reporter of the information should be careful to include the mass of this material as well as the mass of each of the compounds. The total for the group should be inclusive of all the individual compounds. These will not be double-counted by the DAQ.

Glycol Ethers (pollutant code **171**)

The number of individual compounds that could be contained in the glycol ethers compound category is enormous. There could be more than 4,500 potentially included compounds. However, only a few are in common use. Additionally, these compounds are not expected to pose the health impacts associated with other HAP compound categories. Therefore, DAQ is not requiring specific pollutants within the glycol ether compound category to be speciated at this

time for the purposes of the emissions inventory. However, if a facility wishes to go into more detail and report individual compounds in the "glycol ethers" category, it may do so (assuming an appropriate pollutant code can be found in the emissions inventory software). For a list of available "glycol ether" pollutant codes, see Table 3 below.

On November 29, 2004, US EPA deleted ethylene glycol mono butyl ether (CAS Number 111-76-2) from the list of hazardous air pollutants. Although ethylene glycol mono butyl ether is a "glycol ether," it is not to be included in the glycol ether (code **171**) total reported in the emissions inventory. However, like all other glycol ethers, ethylene glycol mono butyl ether is still a **VOC** and must still be included in the **VOC** total reported in the emissions inventory. All other glycol ethers are still reportable as **VOC** emissions and as HAP emissions.

Hazardous Air Pollutant Lists

The following pollutant lists are derived from the available pollutant codes in our modified POLL.DBF table for the Satellite i-Steps emissions inventory software and USEPA's list of 187 HAPs, per §112(b) of the 1990 Clean Air Act Amendments. (That list can also be found in 45CSR30).

Table 1 includes the first 170 HAPs from USEPA's list, which had specific CAS numbers listed.

Table 2 includes the remaining 17 HAP compound groups from the end of USEPA's list, which had no CAS numbers listed. The pollutant codes were taken from the emissions inventory software, as updated for consistency with USEPA's National Emissions Inventory (NEI) database. The table also includes 4 additional groups used in the NEI database.

Table 3 includes individual pollutant codes available from our modified POLL.DBF table for Satellite i-Steps, for groups listed in Table 2. All known members of these groups (which have pollutant codes available in the software) have been compiled in Table 3. Speciate these groups to the extent possible, and ALSO report the totals for each group. Some of these groups may contain pollutants in addition to those listed in Table 3. In that case, the group total should also include these other pollutants, even if pollutant codes are not available to report them individually.

Table 4 includes pollutant codes which were used by reporting facilities in previous inventories, but have been changed in our modified POLL.DBF table for Satellite i-Steps. These codes were either corrected due to errors in the original table, or changed to be compatible with the NEI database. If you used any of the "old codes" for your emissions inventory reports, replace them with the "new codes," unless you can find a more appropriate code in Tables 1-3.

Table 1

WV CY2009 EI Pollutant Guidance

| | |
|---------|--|
| 75070 | Acetaldehyde |
| 60355 | Acetamide |
| 75058 | Acetonitrile |
| 98862 | Acetophenone |
| 53963 | 2-Acetylaminofluorene |
| 107028 | Acrolein |
| 79061 | Acrylamide |
| 79107 | Acrylic Acid |
| 107131 | Acrylonitrile |
| 107051 | Allyl Chloride |
| 92671 | 4-Aminobiphenyl |
| 62533 | Aniline |
| 90040 | 2-Anisidine (o-Anisidine) |
| 1332214 | Asbestos |
| 71432 | Benzene (including benzene from gasoline) |
| 92875 | Benzidine |
| 98077 | Benzotrichloride |
| 100447 | Benzyl Chloride |
| 92524 | Biphenyl |
| 117817 | bis(2-Ethylhexyl)Phthalate (DEHP) |
| 542881 | bis(Chloromethyl) Ether |
| 75252 | Bromoform |
| 106990 | 1,3-Butadiene |
| 156627 | Calcium Cyanamide |
| 133062 | Captan |
| 63252 | Carbaryl |
| 75150 | Carbon Disulfide |
| 56235 | Carbon Tetrachloride |
| 463581 | Carbonyl Sulfide |
| 120809 | Catechol |
| 133904 | 3-Amino-2,5-Dichlorobenzoic Acid (Chloramben) |
| 57749 | Chlordane |
| 7782505 | Chlorine |
| 79118 | Chloroacetic Acid |
| 532274 | 2-Chloroacetophenone |
| 108907 | Chlorobenzene |
| 510156 | Chlorobenzilate |
| 67663 | Chloroform |
| 107302 | Chloromethyl Methyl Ether |
| 126998 | Chloroprene |
| 1319773 | Cresols (mixed isomers) |
| 95487 | o-Cresol |
| 108394 | m-Cresol |
| 106445 | p-Cresol |
| 98828 | Cumene |
| 94757 | 2,4-D (2,4-Dichlorophenoxyacetic Acid)(including salts and esters) |
| 72559 | DDE (1,1-Dichloro-2,2-bis(p-Chlorophenyl) Ethylene) |
| 334883 | Diazomethane |

| | |
|---------|---|
| 132649 | Dibenzofuran |
| 96128 | 1,2-Dibromo -3-Chloropropane |
| 84742 | Dibutyl Phthalate |
| 106467 | 1,4-Dichlorobenzene |
| 91941 | 3,3'-Dichlorobenzidine |
| 111444 | Dichloroethyl Ether (bis[2-Chloroethyl]Ether) |
| 542756 | 1,3-Dichloropropene |
| 62737 | Dichlorvos |
| 111422 | Diethanolamine |
| 121697 | N,N-Dimethylaniline |
| 64675 | Diethyl Sulfate |
| 119904 | 3,3'-Dimethoxybenzidine |
| 60117 | 4-Dimethylaminoazobenzene |
| 119937 | 3,3'-Dimethylbenzidine |
| 79447 | Dimethylcarbamoyl Chloride |
| 68122 | N,N-Dimethylformamide |
| 57147 | 1,1-Dimethylhydrazine |
| 131113 | Dimethyl Phthalate |
| 77781 | Dimethyl Sulfate |
| 534521 | 4,6-Dinitro-o-Cresol (including salts) |
| 51285 | 2,4-Dinitrophenol |
| 121142 | 2,4-Dinitrotoluene |
| 123911 | 1,4-Dioxane |
| 122667 | 1,2-Diphenylhydrazine |
| 106898 | Epichlorohydrin (1-Chloro-2,3-Epoxypropane) |
| 106887 | 1,2-Epoxybutane |
| 140885 | Ethyl Acrylate |
| 100414 | Ethylbenzene |
| 51796 | Ethyl Carbamate (Urethane) |
| 75003 | Ethyl Chloride |
| 106934 | Ethylene Dibromide (Dibromoethane) |
| 107062 | Ethylene Dichloride (1,2-Dichloroethane) |
| 107211 | Ethylene Glycol |
| 151564 | Ethyleneimine (Aziridine) |
| 75218 | Ethylene Oxide |
| 96457 | Ethylene Thiourea |
| 75343 | Ethylidene Dichloride (1,1-Dichloroethane) |
| 50000 | Formaldehyde |
| 76448 | Heptachlor |
| 118741 | Hexachlorobenzene |
| 87683 | Hexachloro-1,3-Butadiene |
| 77474 | Hexachlorocyclopentadiene |
| 67721 | Hexachloroethane |
| 822060 | Hexamethylene-1,6-Diisocyanate |
| 680319 | Hexamethylphosphoramide |
| 110543 | Hexane |
| 302012 | Hydrazine |
| 7647010 | Hydrochloric Acid (Hydrogen Chloride) |

| | |
|---------|---|
| 7664393 | Hydrogen Fluoride (Hydrofluoric Acid) |
| 123319 | Hydroquinone |
| 78591 | Isophorone |
| 58899 | 1,2,3,4,5,6-Hexachlorocyclohexane (all stereo isomers, including Lindane) |
| 108316 | Maleic Anhydride |
| 67561 | Methanol |
| 72435 | Methoxychlor |
| 74839 | Methyl Bromide (Bromomethane) |
| 74873 | Methyl Chloride (Chloromethane) |
| 71556 | Methyl Chloroform (1,1,1-Trichloroethane) |
| 60344 | Methylhydrazine |
| 74884 | Methyl Iodide (Iodomethane) |
| 108101 | Methyl Isobutyl Ketone (Hexone) |
| 624839 | Methyl Isocyanate |
| 80626 | Methyl Methacrylate |
| 1634044 | Methyl tert-Butyl Ether |
| 101144 | 4,4'-Methylenebis(2-Chloroaniline) |
| 75092 | Methylene Chloride (Dichloromethane) |
| 101688 | 4,4'-Methylenediphenyl Diisocyanate (MDI) |
| 101779 | 4,4'-Methylenedianiline |
| 91203 | Naphthalene |
| 98953 | Nitrobenzene |
| 92933 | 4-Nitrobiphenyl |
| 100027 | 4-Nitrophenol |
| 79469 | 2-Nitropropane |
| 684935 | N-Nitroso-N-Methylurea |
| 62759 | N-Nitrosodimethylamine |
| 59892 | N-Nitrosomorpholine |
| 56382 | Parathion |
| 82688 | Pentachloronitrobenzene (Quintobenzene) |
| 87865 | Pentachlorophenol |
| 108952 | Phenol |
| 106503 | p-Phenylenediamine |
| 75445 | Phosgene |
| 7803512 | Phosphine |
| 7723140 | Phosphorus (yellow or white) |
| 85449 | Phthalic Anhydride |
| 1336363 | Polychlorinated Biphenyls (Aroclors) |
| 1120714 | 1,3-Propane Sultone |
| 57578 | beta-Propiolactone |
| 123386 | Propionaldehyde |
| 114261 | Propoxur (Baygon) |
| 78875 | Propylene Dichloride (1,2-Dichloropropane) |
| 75569 | Propylene Oxide |
| 75558 | 1,2-Propylenimine (2-Methylaziridine) |
| 91225 | Quinoline |
| 106514 | Quinone (p-Benzoquinone) |
| 100425 | Styrene |

| | |
|---------|--|
| 96093 | Styrene Oxide |
| 1746016 | 2,3,7,8-Tetrachlorodibenzo-p-Dioxin |
| 79345 | 1,1,2,2-Tetrachloroethane |
| 127184 | Tetrachloroethylene (Perchloroethylene) |
| 7550450 | Titanium Tetrachloride |
| 108883 | Toluene |
| 95807 | 2,4-Toluenediamine |
| 584849 | 2,4-Toluene Diisocyanate |
| 95534 | o-Toluidine |
| 8001352 | Toxaphene (Chlorinated Camphene) |
| 120821 | 1,2,4-Trichlorobenzene |
| 79005 | 1,1,2-Trichloroethane |
| 79016 | Trichloroethylene |
| 95954 | 2,4,5-Trichlorophenol |
| 88062 | 2,4,6-Trichlorophenol |
| 121448 | Triethylamine |
| 1582098 | Trifluralin |
| 540841 | 2,2,4-Trimethylpentane |
| 108054 | Vinyl Acetate |
| 593602 | Vinyl Bromide |
| 75014 | Vinyl Chloride |
| 75354 | Vinylidene Chloride (1,1-Dichloroethylene) |
| 1330207 | Xylene (mixed isomers) |
| 95476 | o-Xylene |
| 108383 | m-Xylene |
| 106423 | p-Xylene |

This table includes the remaining 17 HAP compound groups from the end of the USEPA HAP 187 list, which had no CAS numbers listed. The pollutant codes were taken from the Satellite i-Steps emissions inventory software. Individual USEPA pollutant codes for the groups listed here are included in Table 3.

| | |
|-----|---|
| 92 | Antimony Compounds |
| 93 | Arsenic Compounds(inorganic including arsine) |
| 109 | Beryllium Compounds |
| 125 | Cadmium Compounds |
| 136 | Chromium Compounds |
| 139 | Cobalt Compounds |
| 140 | Coke Oven Emissions |
| 144 | Cyanide Compounds |
| 171 | Glycol Ethers (excluding ethylene glycol mono butyl ether 111-76-2) |
| 195 | Lead Compounds |
| 198 | Manganese Compounds |
| 199 | Mercury Compounds |
| 383 | Fine Mineral Fibers |
| 226 | Nickel Compounds |
| 246 | Polycyclic Organic Matter |
| 400 | Radionuclides (including Radon) |
| 253 | Selenium Compounds |

Other groups listed in USEPA's NEI database and in Table 3 are as follows:

| | |
|-----|-------------------------------------|
| 155 | Dioxins |
| 609 | Furans |
| 600 | Dioxins/Furans as 2,3,7,8-TCDD TEQs |
| 398 | Phosphorus Compounds |

This table includes pollutant codes available from the Satellite i-Steps emissions inventory software for groups listed in Table 2. All known members of these groups (which have pollutant codes available in the software) have been compiled in this table. Speciate these groups to the extent possible, and ALSO report the totals for each group. Some of these groups may contain pollutants in addition to those listed here. In that case, the group total should also include these other pollutants, even if pollutant codes are not available to report them individually.

92 - Antimony Compounds

| | |
|----------|-----------------------------|
| 92 | Antimony & Compounds |
| 7440360 | Antimony |
| 1327339 | Antimony Oxide |
| 7783702 | Antimony Pentafluoride |
| 10025919 | Antimony Trichloride |
| 1309644 | Antimony Trioxide |
| 1345046 | Antimony Trisulfide |
| 16925250 | Sodium Hexafluoroantimonate |

93 - Arsenic Compounds(inorganic including arsine)

| | |
|---------|--|
| 93 | Arsenic & Compounds (inorganic including Arsine) |
| 7440382 | Arsenic |
| 1327522 | Arsenic Acid |
| 1303282 | Arsenic Pentoxide |
| 1327533 | Arsenic Trioxide |
| 3141126 | Arsenous Acid |
| 7784421 | Arsine |

109 - Beryllium Compounds

| | |
|----------|-----------------------|
| 109 | Beryllium & Compounds |
| 7440417 | Beryllium |
| 7787497 | Beryllium Fluoride |
| 1304569 | Beryllium Oxide |
| 13510491 | Beryllium Sulfate |

125 - Cadmium Compounds

| | |
|----------|---------------------|
| 125 | Cadmium & Compounds |
| 7440439 | Cadmium |
| 10108642 | Cadmium Chloride |
| 7790809 | Cadmium Iodide |
| 10325947 | Cadmium Nitrate |
| 1306190 | Cadmium Oxide |
| 10124364 | Cadmium Sulfate |
| 1306236 | Cadmium Sulfide |

136 - Chromium Compounds

(Trivalent and other)

| | |
|----------|----------------------|
| 136 | Chromium & Compounds |
| 7440473 | Chromium |
| 10060125 | Chromium Chloride |

| | |
|----------|----------------------|
| 12018018 | Chromium Dioxide |
| 1308141 | Chromium Hydroxide |
| 16065831 | Chromium III |
| 1308389 | Chromium (III) Oxide |
| 10101538 | Chromic Sulfate |
| 12018198 | Chromium Zinc Oxide |
| 50922297 | Zinc Chromite |

(Hexavalent)

| | |
|----------|-------------------------|
| 7789095 | Ammonium Dichromate |
| 7778509 | Potassium Dichromate |
| 10588019 | Sodium Dichromate |
| 11115745 | Chromic Acid |
| 7738945 | Chromic Acid |
| 13530682 | Chromic Sulfuric Acid |
| 10294403 | Barium Chromate |
| 13765190 | Calcium Chromate |
| 14307358 | Lithium Chromate |
| 7789006 | Potassium Chromate |
| 7775113 | Sodium Chromate |
| 10034829 | Sodium Chromate(VI) |
| 7789062 | Strontium Chromate |
| 13530659 | Zinc Chromate |
| 1308130 | Zinc Chromates |
| 7788967 | Chromyl Fluoride |
| 1333820 | Chromium Trioxide |
| 14977618 | Chromyl Chloride |
| 18540299 | Chromium (VI) |
| 11103869 | Potassium Zinc Chromate |

139 - Cobalt Compounds

| | |
|----------|-----------------------------|
| 139 | Cobalt & Compounds |
| 7440484 | Cobalt |
| 1345160 | CI Pigment Blue 28 |
| 16842038 | Cobalt Carbonate |
| 1308061 | Cobalt Oxide (II,III) |
| 1307966 | Cobalt Oxide |
| 1317426 | Cobalt Sulfide |
| 618 | Cobalt Hydrocarbonyl |
| 136527 | Hexanoic Acid, Cobalt Drier |
| 61789513 | Cobalt Naphtha |
| 10124433 | Cobalt Sulfate |

140 - Coke Oven Emissions

| | |
|---------|-------------------------------------|
| 140 | Coke Oven Emissions |
| 141 | Benzene Soluble Organics |
| 142 | Methylene Chloride Soluble Organics |
| 8007452 | Coal Tar Pitch Volatiles |

144 - Cyanide Compounds

| | |
|----------|----------------------------|
| 144 | Cyanide & Compounds |
| 57125 | Cyanide |
| 13967505 | Gold (I) Potassium Cyanide |
| 554074 | Gold Potassium Cyanide |
| 37187647 | Gold Cyanide |
| 140294 | Benzyl Cyanide |
| 544923 | Copper Cyanide |
| 13943583 | Potassium Ferrocyanide |
| 74908 | Hydrogen Cyanide |
| 14220178 | Potassium Nickel Cyanide |
| 151508 | Potassium Cyanide |
| 78820 | 2-Methyl-Propanenitrile |
| 506649 | Silver Cyanide |
| 143339 | Sodium Cyanide |
| 557211 | Zinc Cyanide |

171 - Glycol Ethers

| | |
|----------|---|
| 171 | Glycol Ethers |
| 110714 | 1,2-Dimethoxyethane |
| 23436193 | 1-Isobutoxy-2-Propanol |
| 120558 | 2,2'-Oxybisdibenzoate Ethanol |
| 112254 | 2-(Hexyloxy) Ethanol |
| 112072 | 2-Butoxyethyl Acetate |
| 20706256 | 2-Propoxyethyl Acetate |
| 112367 | Bis(2-Ethoxyethyl) Ether |
| 124174 | Butyl Carbitol Acetate |
| 111762 | Butyl Cellosolve |
| 112152 | Carbitol Acetate |
| 111159 | Cellosolve Acetate |
| 110805 | Cellosolve Solvent |
| 16672392 | Di(Ethylene Glycol Monobutyl Ether) Phthalate |
| 4206615 | Diethylene Glycol Diglycidyl Ether |
| 111966 | Diethylene Glycol Dimethyl Ether |
| 693210 | Diethylene Glycol Dinitrate |
| 764998 | Diethylene Glycol Divinyl Ether |
| 10143530 | Diethylene Glycol Ethylvinyl Ether |
| 1002671 | Diethylene Glycol Ethyl Methyl Ether |
| 10143541 | Diethylene Glycol Mono-2-Cyanoethyl Ether |
| 10143563 | Diethylene Glycol-Mono-2-Methyl-Pentyl Ether |
| 112345 | Diethylene Glycol Monobutyl Ether |
| 111900 | Diethylene Glycol Monoethyl Ether |
| 18912806 | Diethylene Glycol Monoisobutyl Ether |
| 111773 | Diethylene Glycol Monomethyl Ether |
| 929373 | Diethylene Glycol Monovinyl Ether |
| 3775857 | Ethylene Glycol Bis(2,3-Epoxy-2-Methylpropyl) |
| 7529273 | Ethylene Glycol Diallyl Ether |
| 629141 | Ethylene Glycol Diethyl Ether |

| | |
|----------|--|
| 109864 | Ethylene Glycol Methyl Ether |
| 10137981 | Ethylene Glycol Mono-2,6,8-Trimethyl-4-Nonyl Ether |
| 10137969 | Ethylene Glycol Mono-2-Methylpentyl Ether |
| 662082 | Ethylene Glycol Monobenzyl Ether |
| 110496 | Ethylene Glycol Monomethyl Ether Acetate |
| 23495127 | Ethylene Glycol Monophenyl Ether Propionate |
| 764487 | Ethylene Glycol Monovinyl Ether |
| 7795917 | Ethylene Glycol Mono-sec-Butyl Ether |
| 67425 | Ethylenebis(Oxyethylenenitrilo) Tetraacetic Acid |
| 4439241 | Isobutyl Cellosolve |
| 111104 | Methoxyethyl Oleate |
| 112356 | Methoxytriglycol |
| 140056 | Methyl Cellosolve Acetylricinoleate |
| 3121617 | Methyl Cellosolve Acrylate |
| 112594 | N-Hexyl Carbitol |
| 122996 | Phenyl Cellosolve |
| 2807309 | Propyl Cellosolve |
| 10215335 | Propylene Glycol Monobutyl Ether |
| 1589497 | Propylene Glycol Methyl Ether Acetate |
| 112276 | Triethylene Glycol |
| 112492 | Triethylene Glycol Dimethyl Ether |
| 143226 | Triglycol Monobutyl Ether |

195 - Lead Compounds

| | |
|----------|---------------------------------------|
| 195 | Lead & Compounds |
| 602 | Lead Compounds (inorganic) |
| 603 | Lead Compounds (other than inorganic) |
| 7439921 | Lead |
| 88 | Alkylated Lead |
| 301042 | Lead Acetate |
| 7784409 | Lead Arsenate |
| 10031137 | Lead Arsenite |
| 598630 | Lead Carbonate |
| 7758976 | Lead Chromate |
| 18454121 | Lead Chromate Oxide |
| 1309600 | Lead Dioxide |
| 620 | Lead Dioxide, unknown CAS # |
| 13814965 | Lead Fluoroborate |
| 61790145 | Lead Naphthenate |
| 27253287 | Lead Neodecanoate |
| 10099748 | Lead Nitrate |
| 1317368 | Lead Oxide |
| 1335257 | Lead Oxide |
| 7446277 | Lead Phosphate |
| 7428480 | Lead Stearate |
| 1335326 | Lead Subacetate |
| 7446142 | Lead Sulfate |
| 1314416 | Lead Tetroxide |

| | |
|----------|----------------------|
| 12060003 | Lead Titanate |
| 12626812 | Lead Titanate Zircon |
| 78002 | Tetraethyl Lead |

198 - Manganese Compounds

| | |
|----------|-------------------------|
| 198 | Manganese & Compounds |
| 7439965 | Manganese |
| 1313139 | Manganese Dioxide |
| 1336932 | Manganese Naphthenates |
| 10377669 | Manganese Nitrate |
| 1317346 | Manganese Oxide |
| 7785877 | Manganese Sulfate |
| 8030704 | Manganese Tallate |
| 1317357 | Manganese Tetroxide |
| 7783166 | Manganese Hypophosphite |
| 10101505 | Permanganic Acid |
| 7722647 | Potassium Permanganate |

199 - Mercury Compounds

| | |
|----------|--------------------------------|
| 199 | Mercury & Compounds |
| 7439976 | Mercury |
| 200 | Mercury (elemental gaseous) |
| 201 | Mercury (gaseous divalent) |
| 202 | Mercury (particulate divalent) |
| 7487947 | Mercuric Chloride |
| 22967926 | Mercury (organic) |
| 62384 | Mercury Acetato Phen |
| 593748 | Methyl Mercury |

383 - Fine Mineral Fibers

| | |
|-----|-----------------------------|
| 383 | Fine Mineral Fibers |
| 608 | Ceramic Fibers (man-made) |
| 613 | Glasswool (man-made fibers) |
| 617 | Rockwool (man-made fibers) |
| 616 | Slagwool (man-made fibers) |

226 - Nickel Compounds

| | |
|----------|---------------------------------|
| 226 | Nickel & Compounds |
| 7440020 | Nickel |
| 10101970 | Nickel (II) Sulfate Hexahydrate |
| 373024 | Nickel Acetate |
| 13462889 | Nickel Bromide |
| 12710360 | Nickel Carbide |
| 3333393 | Nickel Carbonate |
| 13463393 | Nickel Carbonyl |
| 7718549 | Nickel Chloride |
| 6018899 | Nickel Diacetate Tet |
| 12054487 | Nickel Hydroxide |

| | |
|----------|----------------------|
| 13138459 | Nickel Nitrate |
| 1313991 | Nickel Oxide |
| 1314063 | Nickel Peroxide |
| 604 | Nickel Refinery Dust |
| 12035722 | Nickel Subsulfide |
| 13770893 | Nickel Sulfamate |
| 7786814 | Nickel Sulfate |
| 1271289 | Nickelocene |

246 - Polycyclic Organic Matter**(15-PAH)**

| | |
|--------|----------------------|
| 83329 | Acenaphthene |
| 208968 | Acenaphthylene |
| 120127 | Anthracene |
| 191242 | Benzo[g,h,i]Perylene |
| 206440 | Fluoranthene |
| 86737 | Fluorene |
| 85018 | Phenanthrene |
| 129000 | Pyrene |

(7-PAH)

| | |
|----------|----------------------------|
| 56553 | Benz[a]Anthracene |
| 50328 | Benzo[a]Pyrene |
| 205992 | Benzo[b]Fluoranthene |
| 207089 | Benzo[k]Fluoranthene |
| 218019 | Chrysene |
| 53703 | Dibenzo[a,h]Anthracene |
| 193395 | Indeno[1,2,3-c,d]Pyrene |
| 103 | Benz(a)Anthracene/Chrysene |
| 102 | Benzo[b+k]Fluoranthene |
| 56832736 | Benzo[fluoranthenes] |
| 75 | 7-PAH |
| 234 | PAH, Total |
| 246 | Polycyclic Organic Matter |

(Non-15 PAH)

| | |
|----------|--------------------------------|
| 779022 | 9-Methylanthracene |
| 26914181 | Methyl Anthracene |
| 2422799 | 12-Methylbenz(a)Anthracene |
| 57976 | 7,12-Dimethylbenz[a]Anthracene |
| 56495 | 3-Methylcholanthrene |
| 203338 | Benzo(a)Fluoranthrene |
| 195197 | Benzo(a)Phenanthrene |
| 192972 | Benzo[e]Pyrene |
| 203123 | Benzo(g,h,i)Fluoranthene |
| 205823 | B[j]Fluoranthene |
| 189559 | Dibenzo[a,i]Pyrene |
| 247 | Methylbenzopyrenes |

| | |
|----------|----------------------------------|
| 3697243 | 5-Methylchrysene |
| 7496028 | 6-Nitrochrysene |
| 248 | Methylchrysene |
| 625 | Naphthenes (cyclo) |
| 224420 | Dibenzo[a,j]Acridine |
| 192654 | Dibenzo[a,e]Pyrene |
| 189640 | Dibenzo[a,h]Pyrene |
| 191300 | Dibenzo[a,l]Pyrene |
| 284 | Extractable Organic Matter (EOM) |
| 607578 | 2-Nitrofluorene |
| 90120 | 1-Methylnaphthalene |
| 91587 | 2-Chloronaphthalene |
| 91576 | 2-Methylnaphthalene |
| 198550 | Perylene |
| 832699 | 1-Methyl-Phenanthrene |
| 40 | 16-PAH |
| 42397648 | 1,6-Dinitropyrene |
| 42397659 | 1,8-Dinitropyrene |
| 2381217 | 1-Methylpyrene |
| 5522430 | 1-Nitropyrene |

400 - Radionuclides

| | |
|----------|---------------------------------|
| 400 | Radionuclides (including Radon) |
| 605 | Radionuclides |
| 606 | Radon and its Decay Products |
| 24267569 | Iodine-131 |
| 7440611 | Uranium |

253 - Selenium Compounds

| | |
|----------|-----------------------|
| 253 | Selenium & Compounds |
| 7782492 | Selenium |
| 7446084 | Selenium Dioxide |
| 7488564 | Selenium Disulfide |
| 7783791 | Selenium Hexafluoride |
| 7446346 | Selenium Monosulfide |
| 12640890 | Selenium Oxide |
| 7783008 | Selenious Acid |

155 - Dioxins (total, non-TEQ)

| | |
|----------|---|
| 155 | Dioxins |
| 610 | Dioxins, Total, w/o Individual Isomers Reported |
| 622 | Hexachlorodibenzo-p-Dioxins, Total |
| 623 | Polychlorinated Dibenzo-p-Dioxins, Total |
| 262124 | Dibenzo-p-Dioxin |
| 37871004 | Total Heptachlorodibenzo-p-Dioxin |
| 34465468 | Hexachlorodibenzo-p-Dioxin |
| 36088229 | Total Pentachlorodibenzo-p-Dioxin |
| 41903575 | Total Tetrachlorodibenzo-p-Dioxin |

609 - Furans (total, non-TEQ)

| | |
|----------|--------------------------------------|
| 609 | Dibenzofurans (Chlorinated) {PCDFS} |
| 624 | Polychlorinated Dibenzofurans, Total |
| 38998753 | Total Heptachlorodibenzofuran |
| 55684941 | Total Hexachlorodibenzofuran |
| 30402154 | Total Pentachlorodibenzofuran |
| 30402143 | Total Tetrachlorodibenzofuran |

600 - Dioxins/Furans (2,3,7,8-TCDD TEQs)

| | |
|----------|---|
| 600 | 2,3,7,8-TCDD TEQ |
| 35822469 | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin |
| 39227286 | 1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin |
| 57653857 | 1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin |
| 40321764 | 1,2,3,7,8-Pentachlorodibenzo-p-Dioxin |
| 1746016 | 2,3,7,8-Tetrachlorodibenzo-p-Dioxin |
| 67562394 | 1,2,3,4,6,7,8-Heptachlorodibenzofuran |
| 55673897 | 1,2,3,4,7,8,9-Heptachlorodibenzofuran |
| 70648269 | 1,2,3,4,7,8-Hexachlorodibenzofuran |
| 57117449 | 1,2,3,6,7,8-Hexachlorodibenzofuran |
| 72918219 | 1,2,3,7,8,9-Hexachlorodibenzofuran |
| 57117416 | 1,2,3,7,8-Pentachlorodibenzofuran |
| 60851345 | 2,3,4,6,7,8-Hexachlorodibenzofuran |
| 57117314 | 2,3,4,7,8-Pentachlorodibenzofuran |
| 51207319 | 2,3,7,8-Tetrachlorodibenzofuran |
| 39001020 | Octachlorodibenzofuran |
| 3268879 | Octachlorodibenzo-p-Dioxin |
| 19408743 | 1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin |

398 - Phosphorus Compounds

| | |
|----------|--------------------------|
| 398 | Phosphorus & Compounds |
| 7723140 | Phosphorus |
| 7664382 | Phosphoric Acid |
| 92203026 | Phosphoric Acid, RX P |
| 2921882 | Phosphorothioic Acid |
| 10294561 | Phosphorous Acid |
| 12136913 | Phosphorous Nitride |
| 13011546 | Phosphorous Salt |
| 10025873 | Phosphorus Oxychloride |
| 1314803 | Phosphorus Pentasulfide |
| 1314563 | Phosphorus Pentoxide |
| 7719122 | Phosphorus Trichloride |
| 1314245 | Phosphorus Trioxide |
| 78308 | Triorthocresyl Phosphate |
| 115866 | Triphenyl Phosphate |
| 101020 | Triphenyl Phosphite |
| 7779900 | Zinc Phosphate |

Table 4

This table includes pollutant codes which were used by reporting facilities in previous inventories, but have been changed in our modified POLL.DBF table for Satellite i-Steps. These codes were either corrected due to errors in the original table, or changed to be compatible with the NEI database. If you used any of the “old codes” for your emissions inventory reports, replace them with the “new codes,” unless you can find a more appropriate code in Tables 1-3.

| Old Code | New Code | Pollutant Name |
|-----------|----------|-----------------------------|
| HAZR00002 | 71556 | 1,1,1-Trichloroethane |
| 13BUD | 106990 | 1,3 - Butadiene |
| 2199691 | 106467 | 1,4 - Dichlorobenzene |
| ACETA | 75070 | Acetaldehyde |
| ACEPH | 98862 | Acetophenone |
| ACREN | 107028 | Acrolein |
| 7664417 | NH3 | Ammonia |
| SBC | 92 | Antimony Compounds |
| ASC | 93 | Arsenic Compounds |
| 63466717 | 50328 | Benzo(a)Pyrene-d12 |
| BEC | 109 | Beryllium Compounds |
| DEHP | 117817 | (Bis(2-Ethylhexyl)phthalate |
| BZ | 71432 | Benzene |
| BE | 7440417 | Beryllium |
| 1189851 | 136 | Butylchromate,tert- |
| CD | 7440439 | Cadmium |
| CDC | 125 | Cadmium Compounds |
| CLFM | 67663 | Chloroform |
| 1331820 | 1333820 | Chromium (VI) Oxide |
| CRC | 136 | Chromium Compounds |
| COC | 139 | Cobalt Compounds |
| CE | 140 | Coke Oven Emissions |
| CNC | 144 | Cyanide Compounds |
| 102211 | 107211 | Ethylene Glycol |
| FORM | 50000 | Formaldehyde |
| GLYET | 171 | Glycol Ethers |
| HCL | 7647010 | Hydrochloric Acid |
| HF | 7664393 | Hydrofluoric Acid |
| PB | 7439921 | Lead |
| PBC | 195 | Lead Compounds |
| MNC | 198 | Manganese Compounds |
| HG | 7439976 | Mercury |
| HGC | 199 | Mercury Compounds |
| N458 | 199 | Mercury Compounds -- Form R |
| MTHOL | 67561 | Methanol |
| 67541 | 67561 | Methanol |
| MC | 75092 | Methylene Chloride |
| MTBE | 1634044 | Methyl tert-Butyl Ether |
| 60343 | 60344 | Methyl Hydrazine |
| PAH1 | 91203 | Naphthalene |
| 7440022 | 7440020 | Nickel |

Table 4, cont.

WV CY2009 EI Pollutant Guidance

| | | |
|--------|---------|------------------------------|
| NIC | 226 | Nickel Compounds |
| N495 | 226 | Nickel Compounds -- Form R |
| NMHC | VOC | Nonmethane Hydrocarbons |
| NMOC | VOC | Nonmethane Organic Compounds |
| PAH | 234 | PAH |
| POO | 246 | Polycyclic Organic Matter |
| POM | 246 | Polycyclic Organic Matter |
| PNA | 246 | Polynuclear Aromatics |
| RD | 605 | Radionuclides |
| SEC | 253 | Selenium Compounds |
| TOLU | 108883 | Toluene |
| 180883 | 108883 | Toluene |
| XYLS | 1330207 | Xylenes |